Supreme Court of the United States.

OCTOBER TERM, 1921.

Number 11, Original.

THE STATE OF MINNESOTA,

Complainant,

vs.

THE STATE OF WISCONSIN,

Defendant.

NOTICE OF MOTION AND STIPULATION AS TO FORM OF FINAL DECREE.

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THE STATE OF MINNESOTA,

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vs.

THE STATE OF WISCONSIN,

Defendant.

NOTICE OF MOTION.

You will please take notice that a motion will be made before the above named court, on Monday, the thirtieth day of January, 1922, at the opening of said court on said day, or as soon thereafter as counsel can be heard, for an order of said court directing the entry of a final decree in the above entitled action, pursuant to the opinion filed by said court in the above entitled cause on March 8, 1920.

Said motion will be made upon the stipulation of the attorneys, a copy of which is hereto annexed and made a part hereof; also upon the proposed decree, a copy of which is hereto annexed and made a part hereof; also upon the report of the Commissioners appointed by the above named court to locate the boundary between the parties hereto, which report was filed in the office of the clerk of this court on August 5, 1921, and said motion will be made upon

all the files and records in the above entitled cause.

CLIFFORD L. HILTON,
Attorney General,
W. D. BAILEY,
H. B. FRYBERGER,
Attorneys for Complainant.

To Messrs. William J. Morgan, attorney general of the state of Wisconsin, and Ralph M. Hoyt, deputy attorney general.

Due service of the within notice of motion and the receipt of a true copy thereof admitted this 28th day of December, 1921.

WILLIAM J. MORGAN,
Attorney General.
RALPH M. HOYT,
Deputy Attorney General,
Attorneys for State of Wisconsin.

SUPREME COURT OF THE UNITED STATES.
October Term, 1921.
Number 11, Original.

THE STATE OF MINNESOTA,
Complainant,
vs.
THE STATE OF WISCONSIN,
Defendant.

STIPULATION AS TO FORM OF FINAL DECREE.

It is hereby stipulated, by and between Clifford L. Hilton, attorney general of the state of Minnesota, H. B. Fryberger and W. D. Bailey, attorneys rep-

resenting the state of Minnesota, the complainant above named, and William J. Morgan, attorney general of the state of Wisconsin, and Ralph M. Hoyt, deputy attorney general of Wisconsin, attorneys representing the state of Wisconsin, the defendant above named, that the proposed final decree which is hereto annexed is satisfactory to both parties and their attorneys in the above entitled cause, and the same may be entered if approved by the court.

Dated December 28, 1921.

CLIFFORD L. HILTON,
Attorney General,
W. D. BAILEY,
H. B. FRYBERGER,
Attorneys for State of Minnesota.
WILLIAM J. MORGAN,
Attorney General,
RALPH M. HOYT,
Deputy Attorney General,
Attorneys for State of Wisconsin.

SUPREME COURT OF THE UNITED STATES.
October Term, 1921.
Number 11, Original.

THE STATE OF MINNESOTA,
Complainant,
vs.
THE STATE OF WISCONSIN,
Defendant.

By the Court: The state of Minnesota having

made a motion before the court for a final decree, confirming the report of the Commissioners appointed by the decree in this cause on the 11th day of October, A. D. 1920, to run, locate and designate the boundary line between the state of Minnesota and the state of Wisconsin, in and through Lower Saint Louis Bay, Upper Saint Louis Bay and the Saint Louis River, from Upper Saint Louis Bay to the falls in said river, which report is in words and figures, as follows:

"To the Honorable Chief Justice and the Associate Justices of the Supreme Court of the United States:

We, Samuel S. Gannett, Washington, D. C.; William B. Patton, Duluth, Minn., and John G. D. Mack, Madison, Wisconsin, Commissioners appointed, under decree of the court rendered October 11th, 1920, 'to run, locate and designate the boundary line between the state of Minnesota and the state of Wisconsin, in and through Lower St. Louis Bay, Upper St. Louis Bay and the St. Louis River, from Upper St. Louis Bay to the "Falls" in the said river,' have the honor to submit the following report, with accompanying maps, which maps are marked Exhibit No. 1, entitled,

Supreme Court of the United States.

October Term, 1920.

No. 13, Original.

Tracing of Parts of Original Map of St. Louis Bay and St. Louis River, Made under Direction of Captain George G. Meade, T. E. 1861, Showing Boundary Line Between Minnesota and Wiscon-

sin as Surveyed in Accordance with Terms of Above Decree in 1921,

and

Exhibit No. 2,

entitled

Supreme Court of the United States,

October Term, 1920.

2 No. 13, Original.

Map Showing Boundary Line Between Minnesota and Wisconsin Through St. Louis Bay and up St. Louis River to the Falls as Surveyed in Accordance with Terms of Above Decree in 1921.

Organization.

The Commissioners held their first meeting on October 29th, 1920, in suite 612, Palladio Building, in the City of Duluth, Minnesota, and organized by electing Samuel S. Gannett, Chairman.

Meade Chart.

In carrying out the decree of the court, that the "boundary line must be ascertained upon a consideration of the situation existing in 1846, and accurately described by the Meade Chart," the Commission made a careful study of the Meade Chart, filed as Minnesota's Exhibit No. 1, and found that the scale of said chart, 1:32000, was too small for practical use in determining a line which could be laid out and properly monumented; and that the triangulation points of the original Meade survey, shown on the original Meade map (the location of which was absolutely essential in transferring to the

found points determined on the map), were omitted from the chart.

Meade Map.

An attempt was then made to use the photographic copies of the original Meade map, being Wisconsin's Exhibits Nos. 16C and 16D, but it was found that the process of production had caused unequal shrinkage in the several sheets composing the map, and that no accurate scalings could be made therefrom.

Under instructions of the Commission, Mr. S. S. Gannet went to the office of the U. S. Lake Survey, in the City of Detroit, Michigan, the repository of the original Meade map, and under his personal supervision, caused an accurate tracing to be made of so much of the said Meade map, and the soundings and triangulation points shown thereon, as pertains to the case under consideration. An accurate copy of this tracing, showing in addition the boundary line, as fixed on said map by the Commission, is filed herewith as Exhibit No. 1.

Triangulation Points.

The triangulation points, heretofore noted as being platted on the original Meade map by triangles, and shown in red ink on the aforesaid tracing, are located, in the records of the Lake Survey, by rectangular coordinates referred to the primary triangulation station of the U. S. Lake Survey, known as Minnesota Point North Base, drawn in red ink on aforesaid tracing, and described hereinafter in detail under the heading, "Descriptions and Geo

graphic Positions of Triangulation and Reference Points." Commissioner Gannett secured an accurate copy of said coordinates from the official records of the U. S. Lake Survey, and they are correctly given in Table No. 1, attached to this report.

The original Meade triangulation points have not been in existence for some years, but the Corps of Engineers, U. S. Army, in later surveys of the St. Louis Bays and River, has established new triangulation points and referred the same by rectangular coordinates to aforesaid "Minnesota Point North Base." An accurate copy of the official coordinates of these later triangulation points was also secured by Commissioner Gannett, and a true copy of same is hereto attached and marked Table No. 2.

With these coordinates, it is possible to accurately re-locate the original Meade triangulation points, or to show the new ones on the Meade map in their true positions; and the last mentioned points are thus shown on Exhibit No. 1, being marked by triangles in black ink.

Having the existing, or new, triangulation points platted in their true positions on the Meade map, it is possible to "tie in" by scale any points or lines on said map to these triangulation points, and to transfer said points or lines to the ground by similar measurements from said triangulation points.

Office Procedure.

With this information at hand, the Commission laid down on the tracing of the original Meade map, Exhibit No. 1, the boundary line between the States

of Minnesota and Wisconsin, in accordance with the decree of the court, namely: "From a point midway between Rice's Point and Connor's Point, through the middle of Lower St. Louis Bay, to and with the deep channel leading to Upper St. Louis Bay, and to a point therein immediately south of the southern extremity of Grassy Point, thence westward along the most direct course, through water not less than eight feet deep eastward of Fisherman's Island, as indicated by the red trace A-B-C' on Minnesota's Exhibit No. 1, approximately one mile to the deep channel and immediately west of the bar therein, thence with such channel north and west of Big Island upstream to the "Falls."

The center of the pivot pier of the Inter-State Bridge was found to be the point midway between Rice's Point and Connor's Point, and was designated by the Commission as Station No. 0. From this point, as a beginning, a series of straight lines was laid out to conform with the decree of the court, special care being taken to have the lines over water not less than eight feet deep as shown by the Meade map, and the angle points between said lines numbered consecutively.

5 From such of these angle points as were convenient, "ties" were scaled to the best situated triangulation points on the map, and by means of rectangular coordinates from each angle point on the lines between the "ties," to triangulation points, the lengths and angles of deviation of the several lines were calculated, and closed poly-

gons formed. These polygons were then checked as to closure by the method of latitudes and departures, and any errors found were balanced so as to secure closure. By this means your Commissioners were enabled, with a close approach to accuracy, to determine the lengths and angles of deviation of the several lines composing the projected boundary line.

The lengths and angles thus determined and the "ties" to the several triangulation points, were used as preliminary field notes by the surveying party employed to "run out the boundary line and to locate same by proper monuments, courses and distances."

Boundary Line Above Fond Du Lac.

For that portion of the St. Louis River beyond Fond Du Lac, and extending to the "Falls," and which is not shown on the Meade Chart or map, the Commission established the center line of the river, as a medial line between the shore lines, as surveyed by the Commission, and designated said medial line as the boundary line.

6 The Survey.

As the boundary line, except in a few instances, runs over water from eight feet to over 20 feet in depth, the most convenient time for surveying it was after ice had formed to a safe thickness. The winter proved to be mild and the ice conditions unfavorable, adding greatly to the danger and difficulty of the work, and increasing the time necessary

to finish it.

The surveying party was organized early in January, 1921, and the necessary equipment was rented or purchased. Starting at Station O, heretofore described, the approximate position of the boundary line was laid out on the ice, in the bay and river, from the preliminary field notes, and the "ties" to the triangulation points, measured. Such discrepancies, due to the curvature of the earth, or to errors in scaling from the map, as were shown by measuring the "ties," were allowed for and distributed in the angles and distances of all the lines back to the preceding "tie." If any important discrepancy was discovered, the lines involved were re-run before any adjustments were made. From the final field notes of the adjusted survey, a description of the boundary line by courses and distances was obtained, and is incorporated herein. This work was completed March 19, 1921.

7 Detailed Description of Boundary Line.

The description of the boundary line, as determined, is as follows:

Beginning at Station O, being the center of the pivot pier of the Inter-State Bridge, and being the point midway between Rice's Point and Connor's Point; thence S. 87° 11′ 47″ W. 1,058.18 feet to Station No. 1, from which triangulation point D. M. & N. bears S. 74° 28′ 23″ W. 3,876.88 feet; thence from Station No. 1 S. 58° 24′ 24″ W. 6,452.20 feet to Station No. 2, from which triangulation point

D. M. & N. bears N. 36° 56′ 09″ E. 2,930.03 feet; thence from Station No. 2, S. 37° 26′ 20″ W. 2,224.13 feet to Station No. 3; thence S. 0° 02′ 13″ E. 2,377.86 feet, to Station No. 4, which is triangulation point No. 104 A, being the center of the pivot pier of the Northern Pacific Railway Company's Grassy Point bridge; thence S. 24° 15′ 16″ E. 1,219.18 feet to Station No. 5; thence S. 20° 50′ 20″ W. 3,568.47 feet to Station No. 6, from which triangulation point No. 77 bears S. 89° 46′ 32″ E. 431.56 feet; thence from Station No. 6 S. 59° 10′ 30″ W. 639.96 feet to Station No. 7; thence N. 81° 30′ 50″ W. 1,490.79 feet to Station No. 8, from which Reference Point No. 1, on Carnegie Coal Company's Dock No. 2 bears, N. 53° 41′ 53″ W. 2,226.12 feet; thence from Station No. 8 N. 64° 15′ 16″ W. 2,733.26 feet intersect U. S. Harbor Line between points 52 and 54; thence N. 64° 15′ 16″ W. 790.96 feet to Station No. 9, from which Reference Point No. 1 bears, S. 81° 13′ 57″ E. 1,396.66 feet, and Reference Point No. 2 bears, N. 3° 20′ 30″ W. 298.87 feet, and Reference Point No. 3 bears, N. 39° 31′ 26″ W. 399.91 feet; thence from Station No. 9 S. 77° 23′ 20″ W. 543.30 feet to Station No. 10, from which Reference Point No. 3 bears, N. 32° 49′ 53″ E. 508.35 feet; thence from Station No. 10 S. 56° 38′ 38″ W. 782.01 feet intersect U. S. Harbor Line between points 52 and 54; thence S. 56° 38′ 38″ W. 765.92 feet to Station No. 11; thence S. 79° 02′ 38″ W. 1,140.13 feet to Station No. 12; thence N. 74° 53′ 04″ W. 1,026.12 feet to Station No. 13; thence N. 84° 03′ 50″ W. 41.88 feet intersect U. S. Harbor Line between

points 54 and 56; thence N. 84° 03′ 50″ W. 894.30 feet to Station No. 14, from which triangulation point No. 134 bears, N. 7° 41′ 32″ W. 426.67 feet; thence from Station No. 14 S. 87° 35′ 08″ W. 682.19 feet to Station No. 15; thence S. 49° 41′ 56″ W. 718.34 feet to Station No. 16; thence S. 13° 08′ 37″ W. 673.87 feet intersect U. S. Harbor Line between points 54 and 56; thence S. 13° 08′ 37″ W. 1,164.80 feet to Station No. 17; from which triangulation point No. 6 A bears, N. 74° 51′ 01″ W. 1,678.80 feet, and triangulation point No. 134 bears, S. 80° 24′ 22″ E. 1,956.63 feet; thence from Station No. 17 S. 37° 51′ 17″ W. 1,765.29 feet to Station No. 18; thence S. 58° 45′ 04″ W. 863.61 feet intersect U. S. Harbor Line between points 56 and 58; thence S. 58° 45′ 04″ W. 17.44 feet, to point on boundary line designated as State Line Point No. 4; thence S. 58° 45′ 04″ W. 299.48 feet to point on boundary line designated as State Line Point No. 5; thence S. 58° 45′ 04″ W. 192.96 feet to point on boundary line designated as State Line Point No. 6; thence S. 58° 45′ 04″ W. 161.17 feet to point on boundary line designated as State Line Point No. 7; thence S. 58° 45′ 04″ W. 114.89 feet to Station No. 19, from which triangulation point No. 138 bears, S. 71° 11′ 09″ E. 1,829.09 feet; thence from Station No. 19 S. 51° 57′ 36″ W. 382.86 feet to Station No. 20; thence S. 34° 11′ 18″ W. 368.40 feet to Station No. 21; thence S. 22° 02′ 07″ W. 503.91 feet to Station No. 22; thence S. 7° 16′ 23″ W. 517.47 feet to Station No. 23; thence S. 7° 38′ 14″ E. 673.35 feet to Station No. 24; thence S. 23° 16′ 03″ E

503.01 feet to Station No. 25, from which triangulation point No. 139 bears, S. 4° 35′ 29″ E. 1,372.94 feet; thence from Station No. 25 S. 52° 01′ 30″ E. 506.19 feet to Station No. 26; thence S. 73° 49′ 28″ E. 559.98 feet intersect U. S. Harbor Line between points 58 and 60; thence S. 73° 49′ 28″ E. 774.86 feet to Station No. 27; thence S. 80° 46′ 18″ E. 1,444.44 feet to Station No. 28; from which triangulation point No. 141 bears N. 51° 54′ 46″ E. 413.60 feet; thence from Station No. 28 S. 87° 51′ 12″ E. 612.36 feet to Station No. 29, from which triangulation point No. 141 bears, N. 53° 51′ 26″ W. 391.76 feet; thence from Station No. 29 N. 85° 55′ 10″ E. 734.26 feet to Station No. 30; thence S. 80° 30′ 59″ E. 1,042.58 feet to Station No. 31, from which
9 triangulation point No. 142 A bears, S. 58° 09′38″ E. 1,352.35 feet; thence from Station No. 31 S. 42° 35′ 25″ E. 1,743.83 feet to Station No. 32; thence S. 27° 42′ 42″ E. 933.65 feet to Station No. 33; thence S. 4° 33′ 29″ E. 859.22 feet to Station No. 34, from which triangulation point No. 149 bears, S. 10° 45′ 01″ E. 909.08 feet; thence from Station No. 34 S. 9° 43′ 30″ W. 1,144.75 feet to Station No. 35; thence S. 29° 34′ 26″ W. 836.99 feet to Station No. 36; thence S. 45° 00′ 48″ W. 1,124.71 feet to Station No. 37; thence S. 73° 40′ 49″ W. 1,804.74 feet to Station No. 38; thence S. 55° 07′ 07″ W. 1,219.00 feet to Station No. 39; thence S. 41° 22′ 10″ W. 1,067.03 feet to Station No. 40, from which triangulation point No. 161 bears, S. 38° 35′ 20″ E. 2,553.13 feet; thence from Station No. 40 S. 28° 46′ 42″ W. 1,241.27 feet to Station No. 41, from which

triangulation point No. 150 bears, N. 58° 36′ 05″ W. 192.29 feet; thence from Station No. 41 S. 43° 20′ 57″ W. 2,456.07 feet to Station No. 42; thence S. 24° 13′ 19″ W. 732.00 feet to Station No. 43; thence S. 15° 08′ 18″ E. 723.67 feet to Station No. 44; thence S. 20° 59′ 55″ E. 2,059.18 feet to Station No. 45; thence S. 3° 23′ 08″ E. 395.06 feet; to Station No. 46, which is the center point of the pivot pier of the Spirit Lake Transfer Railway Company's draw bridge; thence S. 18° 41′ 10″ W. 636.70 feet to Station No. 47; thence S. 45° 05′ 51″ W. 1,651.65 feet to Station No. 48, from which triangulation point No. 163 bears, N. 27° 27′ 59″ W. 1,460.97 feet, and triangulation point No. 164 A bears, S. 72° 03′ 35″ E. 1,183.30 feet; thence from Station No. 48 S. 61° 01′ 47″ W. 1,528.67 feet to Station No. 49; thence S. 83° 41′ 53″ W. 943.56 feet to Station No. 50; thence N. 58° 59′ 20″ W. 2,094.46 feet to Station No. 51; thence N. 86° 11′ 16″ W. 1,334.57 feet, to Station No. 52, from which triangulation point No. 156 bears, S. 12° 11′ 32″ W. 2,173.28 feet; thence from Station No. 52 S. 62° 22′ 04″ W. 1,083.67 feet to Station No. 53; thence S. 56° 06′ 50″ W. 959.88 feet to Station No. 54; thence S. 80° 37′ 08″ W. 1,718.48 feet to Station No. 55, from which triangulation point No. 157 bears, S. 60° 21′ 24″ E. 573.05 feet; thence from Station No. 55 N. 47° 27′ 50″ W. 2,089.27 feet to Station No. 56; thence N. 29° 58′ 03″ W. 1,164.22 feet to Station No. 57; thence N. 42° 07′ 22″ W. 1,142.21 feet to Station No. 58; thence N. 65° 03′ 37″ W. 351.62 feet to Station No. 59; thence S. 89° 04′ 51″ W. 618.28

feet to Station No. 60, from which triangulation point No. 20 A bears, N. 52° 40′ 10″ W. 448.82 feet; thence from Station No. 60 S. 50° 24′ 25″ W. 510.88 feet to Station No. 61; thence S. 27° 10′ 59″ W. 1,710.74 feet to Station No. 62; thence S. 45° 48′ 54″ W. 1,145.62 feet to Station No. 63; thence S. 61° 08′ 08″ W. 629.44 feet to Station No. 64; thence S. 89° 56′ 22″ W. 662.66 feet to Station No. 65; thence N. 12° 05′ 38″ W. 746.74 feet to Station No. 66; thence N. 12° 09′ 34″ W. 1,078.22 feet to Station No. 67, from which triangulation point No. 23 bears, S. 75° 15′ 49″ W. 1,173.53 feet; thence from Station No. 67 N. 8° 12′ 30″ W. 754.82 feet to Station No. 68; thence N. 39° 01′ 32″ W. 146.58 feet to Station No. 69; thence N. 60° 10′ 38″ W. 582.57 feet to Station No. 70; thence S. 88° 16′ 12″ W. 1,671.64 feet to Station No. 71; thence N. 46° 22′ 13″ W. 61.32 feet to point on boundary line designated as State Line Point No. 8, being Boundary Line Commission tablet cemented into top of east concrete rail of Fond Du Lac bridge; thence N. 46° 22′ 13″ W. 13.68 feet to center of crown of second arch from south end of said bridge, from which triangulation point No. 24 bears, N. 36° 30′ 43″ E. 1,327.67 feet; thence continuing from center of Fond Du Lac bridge, N. 46° 22′ 13″ W. 13 feet to point on boundary line designated as State Line Point No. 9, being Boundary Line Commission tablet cemented in top of west concrete rail of said bridge; thence continuing N. 46° 22′ 13″ W. 540.38 feet to Station No. 72; thence N. 38° 15′ 28″ W. 373.53 feet to Station No. 73; thence N. 25° 42′ 34″ W. 293.45

feet to Station No. 74; thence N. 0° 24′ 55″ W. 599.00 feet to Station No. 75; thence N. 8° 36′ 50″ E. 980.40 feet to Station No. 76; thence N. 11° 53′ 34″ W. 312.50 feet to Station No. 77; thence N. 25° 10′ 20″ W. 298.11 feet to Station No. 78; thence N. 11° 18′ 12″ W. 547.11 feet to Station No. 79; thence N. 70° 15′ 12″ W. 348.58 feet to Station No. 80; thence S. 83° 52′ 50″ W. 206.38 feet to Station No. 81; thence S. 56° 48′ 52″ W. 305.29 feet to Station No. 82; thence S. 29° 36′ 12″ W. 246.36 feet to Station No. 83; thence S. 5° 16′ 11″ E. 350.46 feet to Station No. 84, being a point in the center of St. Louis River at the "Falls," immediately opposite and 158 feet west of point on the Wisconsin shore, which point was the starting point of the Minnesota-Wisconsin boundary line to the south, run out in 1852. From said Station No. 84, Minnesota terminal monument No. 84 A bears, S. 81° 44′ 24″ W. 424.57 feet, and Wisconsin terminal monument No. 85 A bears, N. 81° 44′ 24″ E. 209.40 feet.

Monuments.

Most of the triangulation points established by the Corps of Engineers, U. S. Army, had been marked by iron pipes, 2 inches in diameter and 4 feet long, capped by 3½ inch bronze tablets, cemented in the top thereof, and inscribed "Corps of Engineers, U. S. Army. Do not move without authority of the United States Engineer Office. Duluth, Minn.," and also bearing the identification mark of the particular corner. With the consent of the United States Engineer's Office at Duluth, the pipes

were removed, and concrete monuments con-
12 structed in their places. The bronze tablet before mentioned was re-set in the top surface of the monument, and another bronze tablet 3 9/10 inches in diameter and inscribed "Minnesota-Wisconsin Boundary Line. 250 Dollars Fine for Disturbing This Point. Set in 1921 Under Orders of the Supreme Court of the United States. Reference Point No. —," was cemented into the side of the monument facing the boundary line.

The monuments weigh about two tons each. The base is constructed of concrete composed of one part cement, 2 parts sand and 4 parts crushed rock. It is four feet square at the bottom, two feet square at the top, and extends four feet below the surface of the ground. The base is surmounted by a prism. The prism is composed of 1 part cement and 1 part sand, and is 15 inches square and 2 feet high, with a rounded top, into the center of which is set the $3\frac{1}{2}$ inch bronze tablet hereinbefore mentioned. The 3 9/10 inch bronze tablet of the Boundary Commission herebefore mentioned is cemented into the side of the prism facing the boundary line.

Each monument is re-inforced by using the iron pipe employed by the Corps of Engineers, U. S. Army to mark the triangulation point, and 4 iron rods one-half inch in diameter by 4 feet in length.

Each of these monuments and the reference and line points fixed by the Commission are fully described hereinafter under the heading, "Descriptions and Geographic Positions of Triangulation and Reference Points."

Owing to the frozen condition of the ground, it was not possible to begin the construction of the monuments until the latter part of April, and the work was completed late in June.

13 Descriptions and Geographic Positions of Triangulation and Reference Points.

Minnesota Point North Base (St. Louis County, Minn., U. S. Engineers, 1870; 1905).—On the low sand spit which separates Lake Superior from Superior Bay. This spit is about 6 miles long and 1/5 mile wide, and the southern end is largely covered with shrubbery and pine forest; the northern end is laid off into streets and is now built up (1921). The station is about 10 meters from the west shore of the spit and is about 1½ miles south of the Duluth ship canal. It is about 100 feet west of the car track and is just north of Twenty-fifth street. Substantial tripod and scaffold were built over the station and it was surrounded by a high board fence, forming a 50 foot square. Marked as follows: A red sandstone block one foot square on top and 3 feet long was set on end so that its top surface is about one inch below the surface of the ground. In the center of the top face of this stone is set a triangular brass plug, 0.03 foot on a side in cross section. On the end of this plug are two scratches running from two corners of the plug and intersecting near its center. The intersection of these two scratches marks the station. Over the top of the sandstone block is placed a cast-iron cap or cover. This cap is ½ inch thick and 2 feet square and is provided

with a flange 6 inches wide setting down into the ground around the head of the stone, so that the top of the surface of the cap is even with the surface of the ground. In the center of the upper surface of the cover is a hub 3/16 inch high and 2 inches in diameter, in the center of which is drilled a 14 1/4-inch hole. This hole marks the center of the station. The ground everywhere around the station is a fine sand. In 1905 the stone center mark was found to be in bad condition, due to disintegration. The following azimuths are from the station: Duluth State Normal School, chimney, 181° 39′ 18″; elevator M, smokestack, 334° 10′ 22″; Alger & Smith's sawmill, smokestack, 71° 17′ 17″.

Latitude, 46° 45′ 28.225″. Longitude, 92° 04′ 42.521″.

Note—This point is identical with Minnesota Point North Base used by Captain George G. Meade in 1861, as a basis from which triangulation for his map was derived.

Triangulation and Reference Point D., M. & N., St. Louis Co., Minnesota.

On Dock No. 5, of Duluth, Missabe & Northern Railway Company, opposite end of east track at south end of dock, 60 feet above surface of St. Louis Bay.

Bronze Tablet of Corps of Engineers, U. S. Army cemented in concrete floor.

Latitude, 46° 44′ 46.713″. Longitude, 92° 07′ 51.155″.

To station	Azimuth.	Back azimuth	Distance, log meters.
102 C	270° 43′ 11″	90° 44′ 13″	3.236 991

Triangulation and Reference Point No. 103 A, St. Louis Co., Minnesota.

At 46th Avenue West and Oneota Street, City of Duluth, 42.6 feet N. E. to Curb Line on east side of 46th Avenue; 31.4 feet S. E. of South Curb Line of Oneota Street; 33.75 feet east of hydrant; 23.7 feet east of corner of porch of frame house.

15 As this point is near the center of a public street, only the base of a concrete monument could be set, the dimensions being:

2 feet square on top.

4 feet square at bottom.

4 feet deep.

Top of monument is flush with dirt paving.

The bronze tablet of Corps of Engineers, U. S. Army, on top of two inch iron pipe, 3 feet in length, was set in center of top of above described concrete monument.

Latitude, 46° 44′ 33.032″. Longitude, 92° 09′ 13.460″.

Carnegie Dock Reference Point No. 1, St. Louis Co., Minnesota.

In City of Duluth at S. W. corner of concrete dock 5 feet above main surface of dock.

7.1 feet east of iron snubbing post.

2.2 feet south of snubbing post.

3.15 feet north of south edge of dock.

12.2 feet east of west edge of dock.

Standard bronze reference tablet of the Boundary Line Commission, stamped No. 1.

Latitude, 46° 43′ 10.682″. Longitude, 92° 09′ 41.537″.

Zenith Dock Reference Point No. 2, St. Louis Co., Minnesota.

In City of Duluth, on property of Zenith Furnace Company, in center of top of concrete pier 36 inches by 52 inches, 30 inches above surface of dock.

16 Pier is at S. E. corner and under trestle 30 feet high, over which dinky cars travel; 48 feet west of steamer dock line. Bronze reference tablet of the Boundary Line Commission, stamped No. 2.

Latitude, 46° 43′ 15.713″. Longitude, 92° 10′ 01.608″.

Zenith Dock Reference Point No. 3, St. Louis Co., Minnesota.

In center of top of concrete pier 36 inches by 49 inches rectangular; 70 inches above ground, located about East-West Center line of dock at date, April 26th, 1921.

Pier is under southwest corner of 30-foot trestle.

Bronze reference tablet of the Boundary Line Commission, stamped No. 3.

Latitude, 46° 43′ 15.810″. Longitude, 92° 10′ 05.007″.

Triangulation and Reference Point 134, St. Louis Co., Minnesota.

Near foot of 70th Avenue West, City of Duluth, on bluff about 40 feet above river, 10 feet from edge

of bluff, and 60 feet from water's edge on land owned by Mr. Granendeng.

68.2 feet S. E. from nearest corner of small frame house.

Standard Monument: In center of top is cemented bronze tablet of Corps of Engineers, U. S. Army, stamped No. 134.

In southeast side of monument facing river is cemented bronze tablet of Boundary Line Commission, stamped No. 134.

Latitude, 46° 43′ 08.771″. Longitude, 92° 11′ 11.966″.

To station—	Azimuth.	Back azimuth.	Distance, log meters.
136	19° 02′ 03″	199° 01′ 48″	3.138 179

17 Triangulation and Reference Point 6 A, St. Louis Co., Minnesota.

On S. E. side of Northern Pacific Railroad track (Pond Du Lac Branch) 0.5 mile N. E. of road crossing, near entrance to McDougall-Duluth Shipyard.

12.4 feet southeast of nearest rail.

Standard Monument: Foundation, 4 feet square at bottom, 4 feet deep; top of foundation, 2 feet square.

Top monument is 15 inches square, 2 feet high, rounded up on top.

In center of top is cemented bronze tablet of Corps of Engineers, U. S. Army, stamped 6 A.

In the side of monument facing river is cemented bronze tablet of Boundary Line Commission.

stamped 6 A.

Latitude, 46° 42′ 46.339″. Longitude, 92° 11′ 57.996″.

To station—	Azimuth.	Back azimuth.	Distance, log meters at sea level.
134	234° 40′ 39″	54° 41′ 12″	3.078 517

Triangulation and Reference Point 139, St. Louis Co., Minnesota.

At Morgan Park on northeast edge of bluff, about 40 feet above river and facing it, 30 feet south of edge of bluff. About 300 feet north of grandstand of baseball park. Land southwest of point is cleared and is nearly level.

Standard Monument: Base, 4 feet square at bottom; 2 feet square at top.

Top Monument: 15 inches square, 2 feet high; rounded top.

In center of top of monument is cemented standard bronze tablet of Corps of Engineers, U. S. Army, stamped 139.

18 In north side of monument facing the river is cemented standard bronze tablet of the Boundary Line Commission, stamped 139.

Latitude, 46° 41′ 40.116″. Longitude, 92° 12′ 15.609″.

Triangulation and Reference Point No. 140 A, St. Louis Co., Minnesota.

On extreme Northeastern point of Spirit Island 50 feet S. W. of caving bluff point and 25 feet from each side of the point about 50 feet above the water

and 100 feet from shore; on government land. Good view in nearly all directions.

Standard Monument: In center of top of which is cemented a bronze tablet of the Corps of Engineers, U. S. Army, stamped 140 A.

In center of north side facing the south end of Big Island is cemented standard bronze tablet of the Boundary Line Commission, stamped 140 A.

Latitude, 46° 41′ 17.762″. Longitude, 92° 11′ 16.456″.

Triangulation and Reference Point No. 150, St. Louis Co., Minnesota.

On point of land, formerly occupied by a clubhouse, but property now owned by Minnesota Steel Company.

Monument is 20 feet above the water, and 40 feet from water's edge, near top of sloping bank.

Standard Monument: In center of top is cemented bronze tablet of Corps of Engineers, U. S. Army, stamped No. 150.

In southeast side of monument facing the river is bronze tablet of the Boundary Line Commission, stamped No. 150.

19 Latitude, 46° 40′ 21.242″. Longitude, 92° 11′ 56.372″.

To station—	Azimuth.	Back azimuth.	Distance, log meters.
139	170° 28′ 24″	350° 28′ 10″	3.392 634
151	244° 13′ 57″	64° 14′ 37″	3.108 917

Triangulation and Reference Point No. 163, St. Louis Co., Minnesota.

On a hogback grassy ridge 0.75 miles east of terminus of street car track at New Duluth, 0.1 mile south of west end of trestle approach to double deck bridge across St. Louis River.

On backbone of ridge 70 feet slope distance above swamp and 20 feet elevation above swamp.

No buildings or trees nearby.

Standard Monument: In center of top is cemented bronze tablet of Corps of Engineers, U. S. Army, stamped No. 163.

In southeast side facing the river is cemented bronze tablet of the Boundary Line Commission, stamped No. 163.

Latitude, 46° 39′ 20.021″. Longitude, 92° 12′ 34.416″.

Triangulation and Reference Point No. 20 A, St. Louis Co., Minnesota.

On north side of Northern Pacific Railroad track, 1 mile east of Fond Du Lac depot; 174.5 feet east of center of Culvert 7-1, 26.5 feet northwest of cross cut on the northwestern one of 12 foundation stones of water tank (now removed), 4.1 feet north of north rail.

As this point is near a railroad, no monument projecting above surface of railroad ballast could be set, so that only the standard base 2 feet square on top and 4 feet square on bottom and 4 feet deep was built.

20 In center of top is cemented bronze tablet of Corps of Engineers, U. S. Army, standard

Minnesota State Library,
St. Paul, Minn.

No. 20 A.

No tablet of Boundary Line Commission set.

Latitude, 46° 39′ 34.234″. Longitude, 92° 15′ 32.172″.

Triangulation and Reference Point No. 24, St. Louis Co., Minnesota.

At Fond Du Lac, near top of wooded bluff 800 feet west and 200 feet north of Northern Pacific Railroad depot, about 100 feet above track.

Original mark of Corps of Engineers, U. S. Army, consisting of 2-inch gas pipe, without tablet.

Standard Monument: In center of top is cemented bronze tablet of Corps of Engineers, U. S. Army, stamped 24.

In south side facing the river is cemented bronze tablet of the Boundary Line Commission, stamped No. 24.

Latitude, 46° 39′ 42.360″. Longitude, 92° 16′ 49.954″.

Minnesota Terminal Point 84 A, St. Louis Co., Minnesota.

Opposite the rapids in St. Louis River 378 feet west of gravelly shore, 270 feet west of river bank 3 feet high, 75 feet east of steep river bluff, about 100 feet high, and on the western edge of level river bottom several acres in area, opposite a perpendicular bluff 12 to 30 feet high on the Wisconsin side.

Standard Monument: In center of top is cemented bronze tablet of the Boundary Line Commission, stamped 84 A.

Latitude, 46° 39′ 59.368″. Longitude, 92° 17′ 37.077″.

21 Triangulation and Reference Point 102 C, Douglas County, Wisconsin.

Center of Wisconsin pivot span of Northern Pacific Railroad Bridge, 0.5 mile southwest of pivot span in Inter-State Bridge.

Point on floor of bridge temporarily marked by five (5) copper nails in 2-inch plank spiked to underside of ties.

Note—Not practicable to permanently mark this point.

Latitude, 46° 44′ 46.002″. Longitude, 92° 06′ 29.861″.

To station—	Azimuth.	Back azimuth.	Distance, log meters at sea level.
Minn. Point, North Base	240° 12′ 28″	60° 13′ 46″	3.419 116

Triaangulation and Reference Point No. 77, Douglas County, Wisconsin.

On property of Gitchinadji Club near Billings Park, on top of level bluff 38 feet east of edge of bluff, and 40 feet above surface of water, 19 feet west of stone chimney at northwest corner of club house.

Good view can be obtained, north, west and south.

Standard Monument: In center of top of which is cemented bronze tablet of the Corps of Engineers, U. S. Army, stamped No. 77.

In center of west side facing St. Louis River is

cemented bronze tablet of the Boundary Line Commission, stamped No. 77.

Latitude, 46° 42′ 58.764″. Longitude, 92° 08′ 40.528″.

Triangulation and Reference Point No. 131,
Douglas County, Wisconsin.

22 On extreme northern point of Big Island on land owned by R. B. Whiteside, on edge of sloping bluff covered with saplings. So that the view is almost entirely cut off.

It is forty feet above and 150 feet southeast of water's edge.

Standard Monument: In center of top of which is cemented a bronze tablet of the Corps of Engineers, U. S. Army, stamped 131.

In center of northwest side facing St. Louis River is cemented standard bronze tablet of the Boundary Line Commission, stamped No. 131.

Latitude, 46° 42′ 38.840″. Longitude, 92° 11′ 07.044″.

Triangulation and Reference Point No. 136,
Douglas County, Wisconsin.

On the northwestern side of Big Island, nearly opposite Pier C of McDougall-Duluth Shipyard, on property owned by E. P. Alexander, 42.3 feet northwest of northwest corner of house, 4.0 feet east of flag-pole, on grassy sloping bluff 30 feet above and 150 feet southeast of St. Louis River.

Standard Monument: In center of top of which is cemented bronze tablet of Corps of Engineers, U. S. Army, stamped No. 136.

In northwest side facing the river is bronze tablet of the Boundary Line Commission, stamped No. 136.

Latitude, 46° 42′ 26.689″. Longitude, 92° 11′ 33.070″.

To station—	Azimuth.	Back azimuth.	Distance, log meters.
6 A	138° 53′ 43″	318° 53′ 24″	2.905 968
134	199° 01′ 48″	19° 02′ 03″	3.138 179

Triangulation and Reference Point No. 138, Douglas County, Wisconsin.

On a bluff point on extreme western central part of Big Island, on edge of cultivated field, owned by R. B. Whiteside, nearly opposite pier A of McDougall-Duluth Shipyard, 15 feet east from edge of bluff, and 40 feet above river. No brush or timber to obstruct view north, west and south.

23

Standard Monument: In center of top of which is cemented bronze tablet of the Corps of Engineers, U. S. Army, stamped 138.

In center of west side facing St. Louis River is standard bronze tablet of the Boundary Line Commission, stamped No. 138.

Latitude, 46° 42′ 13.998″. Longitude, 92° 11′ 45.609″.

To station—	Azimuth.	Back azimuth.	Distance, log meters.
139	31° 21′ 14″	211° 20′ 52″	3.088 151

Triangulation and Reference Point No. 141,
Douglas County, Wisconsin.

On extreme south end of Big Island on land owned by R. B. Whiteside, on edge of steep bluff about 40 feet above and 150 feet north of shore of river.

A growth of saplings 12 or 15 feet high cuts off view.

Standard Monument: In center of top of which is cemented bronze tablet of the Corps of Engineers, U. S. Army, stamped 141.

In center of south side facing St. Louis River is standard bronze tablet of Boundary Line Commission, stamped No. 141.

Latitude, 46° 41′ 47.160″. Longitude, 92° 11′ 27.964″.

To station—	Azimuth.	Back azimuth.	Distance, log meters.
139	77° 52′ 38″	257° 52′ 03″	3.015 119
140 A	344° 55′ 21″	164° 55′ 30″	2.973 195

Triangulation and Reference Point No. 142 A,
Douglas County, Wisconsin.

On a prominent sandy point 0.5 mile southeast of south end of Big Island.

Point is partly covered with a growth of low brush, but there is a good view towards the river.

24 Monument is 15 feet northeast of edge of bluff, 50 feet from shore, and 25 feet above surface of water.

Standard Monument; replacing a small concrete monument of the Corps of Engineers, U. S. Army.

In center of top of monument is bronze tablet of Corps of Engineers, U. S. Army, stamped 142 A.

In center of southwest side facing St. Louis River is standard bronze tablet of the Boundary Line Commission, stamped No. 142 A.

Latitude, 46° 41′ 36.701″. Longitude, 92° 10′ 11.670″.

Triangulation and Reference Point No. 149, Douglas County, Wisconsin.

Near top of sloping steep bank of St. Louis River, at a point east, southeast of Spirit Island, there is a thick growth of brush 10 to 15 feet high, east of monument, but a good view can be obtained toward the west.

Standard Monument: In center of top of which is cemented bronze tablet of the Corps of Engineers, U. S. Army, stamped 149.

In center of west side facing St. Louis River is standard bronze tablet of the Boundary Line Commission, stamped No. 149.

Latitude, 46° 41′ 06.676″. Longitude, 92° 10′ 30.037″.

To station—	Azimuth.	Back azimuth.	Distance, log meters.
151	38° 44′ 58″	218° 44′ 34″	3.034 516

Triangulation and Reference Point No. 151, Douglas County, Wisconsin.

On property of R. B. Knox, 5 feet east of Geo. French's wire fence line, on slope about 5 feet lower than top of bluff, and 35 feet above surface of water, and 60 feet southeast of shore of St.

25 Louis River, 60 feet northwest of tennis court. Saplings 20 feet high cut off view.

Standard Monument: In center of top of which is cemented bronze tablet of the Corps of Engineers, U. S. Army, stamped 151.

In center of northwest side facing St. Louis River is bronze tablet of the Boundary Line Commission, stamped No. 151.

Latitude, 46° 40′ 39.329″. Longitude, 92° 11′ 01.022″.

To station—	Azimuth.	Back azimuth.	Distance, log meters.
149	218° 11′ 34″	38° 11′ 58″	3.034 516
150	61° 11′ 37″	241° 13′ 57″	3.108 917

Triangulation and Reference Point No. 161, Douglas County, Wisconsin.

On a partly timbered point just south of Little Pokegama Bay. This point was "tied to" by the Transit Line of the Boundary Line Survey in February, 1921, when everything was frozen solid. In June, 1921, while the erection of monuments was in progress, it was found to be impracticable to transport necessary material for a monument to the point, as it is surrounded by a swamp on three sides and cannot be reached by road from the mainland southward.

No concrete monument was erected; the mark is a gaspipe two inches in diameter and four feet long, driven in ground flush with surface with bronze tablet of the Corps of Engineers, U. S. Army, cemented in the top of pipe.

Latitude, 46° 40′ 09.790″. Longitude, 92° 11′ 18.920″.

Triangulation and Reference Point No. 164 A,
Douglas County, Wisconsin.

0.5 mile south of swing draw of railroad and highway bridge; on grassy sloping bank, 235 feet southeast of shore of St. Louis River, nearly in line with piling of old dock.

Twenty-five feet down the slope from old
26 grade of railroad, original mark of the Corps of Engineers, U. S. Army, two-inch gaspipe 4 feet long, no cap.

Standard Monument: In center of top of which is cemented bronze tablet of the Corps of Engineers, U. S. Army, stamped 164 A.

In northwest side facing the river is cemented standard bronze tablet of the Boundary Line Commission, stamped No. 164 A.

Latitude, 46 39′ 03.654″. Longitude, 92° 12′ 08.582″.

To station—	Azimuth.	Back azimuth.	Distance, log meters.
154	75 18′ 19″	255° 17′ 44″	3.029 267

Triangulation and Reference Point No. 154,
Douglas County, Wisconsin.

Three-fourths of a mile east of a point opposite the wharf at New Duluth, on the northern edge of a flat summit covered by a growth of saplings 10 to 15 feet high.

Standard Monument: In center of top of which is cemented bronze tablet of the Corps of Engineers,

U. S. Army, stamped 154.

In north side facing the river is bronze tablet of the Boundary Line Commission, stamped No. 154.

Latitude, 46° 38' 54.864". Longitude, 92° 12' 57.240".

To station	Azimuth.	Back azimuth.	Distance, log meters.
156	82° 21' 46"	262° 21' 08"	3.047 370

Triangulation and Reference Point No. 156,
Douglas County, Wisconsin.

One-third of a mile west of a point opposite the wharf at New Duluth, on the middle point of several projecting prongs of the ridge east of Red River.

A swamp is at the base of this ridge on the east, north and west sides, making the approach from the St. Louis River difficult even in a small flat bottomed boat.

Summit of ridge is covered with a growth of birch saplings 20 to 25 feet high. Point is very hard to find.

Standard Monument: In center of top of which is cemented bronze tablet of the Corps of Engineers, U. S. Army, stamped 156.

In north side facing the St. Louis River is cemented bronze tablet of the Boundary Line Commission, stamped No. 156.

Latitude, 46° 38' 50.061". Longitude, 92° 13' 19.217".

Triangulation and Reference Point No. 157,
Douglas County, Wisconsin.

Three-fourths of a mile west of a point opposite

the wharf at New Duluth; on first bluff west of mouth of Red River, 60 feet above and 120 feet south of St. Louis River, 8 feet south of edge of bluff.

Standard Monument: In center of top of which is cemented bronze tablet of the Corps of Engineers, U. S. Army, stamped 157.

In north side of monument facing the river is cemented bronze tablet of the Boundary Line Commission, stamped No. 157.

Latitude, 46° 38′ 55.174″. Longitude, 92° 11′ 25.008″.

To station—	Azimuth.	Back azimuth.	Distance, log meters.
156	281° 13′ 06″	101° 13′ 32″	2.890 476

Triangulation and Reference Point No. 23,
Douglas County, Wisconsin.

Opposite Fond Du Lac, 0.5 mile below (southwest) the concrete bridge at that place; just west of a ravine on a bench about 2 acres in area and 30 feet above the river.

Point is 3 feet from edge of bluff. Scattering trees partly cut off the view of the river.

28 Standard Monument: In center of top of which is cemented bronze tablet of the Corps of Engineers, U. S. Army, stamped 23.

In north side of monument facing river is cemented standard bronze tablet of the Boundary Line Commission, stamped No. 23.

Latitude, 46° 39′ 15.343″. Longitude, 92° 16′ 39.750″.

Wisconsin Terminal Point 85 A, Douglas County, Wisconsin.

On the Wisconsin shore, opposite the rapids in St. Louis River, 55 feet east of perpendicular rocky bluff 12 feet high and opposite level river bottom several acres in area on the Minnesota side.

Standard Monument: The foundation is 3 feet deep, resting on solid rock.

In center of top of monument is cemented bronze tablet of the Boundary Line Commission, stamped No. 85 A.

Latitude, 46° 39' 59.958". Longitude, 92° 17' 28.630".

Triangulation and State Line Point No. 106 B, St. Louis Co., Minn.; Douglas Co., Wis.

Center of pivot span of Interstate Bridge, midway between Rice's Point and Connor's Point, at mouth of St. Louis Bay.

Point on the floor of bridge temporarily marked by five nails is the initial point of line surveyed by the Boundary Line Commission in January, February and March, 1921.

Latitude, 46° 44' 58.568". Longitude, 92° 05' 59.305".

To station—	Azimuth.	Back azimuth.	Distance, log meters at sea level.
North Base	240° 39' 33"	60° 40' 29"	3.271 691

29 Triangulation and State Line Point 101 A, St. Louis Co., Minn.; Douglas Co., Wis.

Center of pivot span of Grassy Point Railroad Bridge 0.6 mile north, northeast of Grassy Point.

Point on floor of bridge temporarily marked by five nails in plank, between double tracks.

Note—Not practicable to permanently mark this point.

Latitude, 46° 43′ 12.675″. Longitude, 92° 08′ 35.742″.

McDougall-Duluth Shipbuilding Co., State Line Point 4, St. Louis Co., Minn.; Douglas Co., Wis.

Cemented in a concrete block 2 feet by 1 feet by 2 feet deep at southwest corner of Pier C, 6.5 feet from south edge, 2.73 feet from west edge. Bronze tablet of the Boundary Line Commission, stamped No. 4.

Latitude, 46° 42′ 23.731″. Longitude, 92° 12′ 01.053″.

McDougall-Duluth Shipbuilding Co., State Line Point 5, St. Louis Co., Minn.; Douglas Co., Wis.

Cemented in a concrete stringer on west side of Pier B, 10 feet east of west edge of pier, 140 feet north of south edge of pier, bronze tablet of the Boundary Line Commission, stamped No. 5.

Latitude, 46° 42′ 22.197″. Longitude, 92° 12′ 01.723″.

McDougall-Duluth Shipbuilding Co., State Line Point 6, St. Louis Co., Minn.; Douglas Co., Wis.

Cemented in concrete stringer on east side of

Pier A, 20 feet west of east edge of pier; 222 feet north of south edge of pier; bronze tablet of the Boundary Line Commission, stamped No. 6.

Latitude, 46° 42′ 21.206″. Longitude, 92° 12′ 07.087″.

30 McDougall-Duluth Shipbuilding Co., State Line Point 7, St. Louis Co., Minn.; Douglas Co., Wis.

Cemented in a concrete block 18 inches by 40 inches by 24 inches deep, on west side of Pier A, 298 feet north from southwest corner 3 feet east from west edge of pier, bronze tablet of the Boundary Line Commission, stamped No. 7.

Latitude, 46° 42′ 20.379″. Longitude, 92° 12′ 09.062″.

Spirit Lake Transfer Railway Bridge, State Line Point 46, St. Louis Co., Minn.; Douglas Co., Wis.

Center of pivot span of double deck bridge, upper deck has railroad tracks and lower deck is used by vehicles.

Point occupied is marked by the center one of 4 nails between tracks on upper deck.

Note—Not practicable to permanently mark this point.

Latitude, 46° 39′ 24.725″. Longitude, 92° 12′ 05.069″.

Fond Du Lac Bridge, State Line Point No. 8, St. Louis Co., Minn.; Douglas Co., Wis.

Cemented in top of east concrete railing of concrete bridge over St. Louis River, in crown of sec-

ond arch span counting from south end, bronze tablet of the Boundary Line Commission, stamped No. 8.

Latitude, 46° 39′ 31.713″. Longitude, 92° 17′ 01.097″.

Fond Du Lac Bridge, State Line Point No. 9, St. Louis Co., Minn.; Douglas Co., Wis.

Cemented in top of west concrete railing of concrete bridge over St. Louis River, in crown of second arch span counting from south end, bronze tablet of the Boundary Line Commission, stamped No. 9.

Latitude, 46° 39′ 31.894″. Longitude, 92° 17′ 01.374″.

31 Map of Boundary Line.

The Commission has prepared, and transmits herewith as Exhibit No. 2, a map of St. Louis Bays and River on the scale of 1:24000, showing their present conditions, improvements along the harbor front, the U. S. Government Harbor Lines and channels, and the relative position of the boundary line. There are also shown as sub-maps, on larger scale, improved or partly improved properties which are crossed by the boundary line; also detail drawings of the concrete monuments as constructed.

Tables.

The rectangular coordinates, referred to Minnesota Point North Base, of all monuments, reference points and line points are shown in Tables Nos. 2, 4 and 5, hereto attached.

The geographic position of the angle points in

the boundary line are shown in Table No. 6.

Instruments.

The instrument used in making the survey was a Transit Theodolite with 6½-inch circle and reading to 10 seconds of arc. The measurements were made on the surface of the ice with a steel tape 300 feet in length, under a tension of twenty pounds, and corrected to temperature of 62° F.

Personnel.

The Commission employed as assistants the following named persons, namely:

Gordon F. Daggett, Madison, Wisconsin, Consulting Engineer.

Lyonel Ayres, Duluth, Minnesota, Consulting Engineer.

D. W. Van Vleck, Superior, Wisconsin, Consulting Engineer.

Paul Lillard, Madison, Wisconsin, Transit Man, in charge of field party.

32 Edwin O. Anderson, Duluth, Minn., Chainman.

Frank Kieserling, Duluth, Minn., Chainman.

Frank Suech, Jr., Duluth, Minn., Rodman.

Robert Case, Duluth, Minn., Rodman.

Robert Sansted, Duluth, Minn., Rodman.

Ray Mapp, Duluth, Minn., Draughtsman.

Eusebe J. Blais, Duluth, Minn., Draughtsman.

Finances.

We return herewith a financial statement showing in detail the money actually expended in carrying out the terms of the decree of the court.

Record Books.

All field, computation and record books have been placed in the custody of the chairman of the Commission, and filed by him in the office of the Geological Survey, Interior Department, Washington, D. C.

Respectfully submitted,

Samuel S. Gannett,
William B. Patton,
John G. D. Mack,
Commissioners.

June 25th, 1921.

The cause coming on to be heard upon said motion of the said state of Minnesota,

It is hereby ordered, adjudged and decreed, that said report of said Commission, filed in the office of the clerk of this court on August 5, 1921, is in all respects confirmed.

It is further ordered, adjudged and decreed that the line as delineated and set forth in said report and upon the two maps accompanying said report being marked respectively Exhibits 1 and 2 by said Commission and which line has been marked by permanent monuments as stated in said report, be and the same is hereby established, declared and decreed to be the true boundary line between the states of Minnesota and Wisconsin and said maps so marked as aforesaid as Exhibits 1 and 2 are directed to be filed as a part of this decree and it appearing that the expenses and compensation of the Commissioners attendant upon the discharge of their duties

amounts to fifteen thousand six hundred twenty-six dollars and six cents ($15,626.06), it is ordered that the same be allowed and approved as a part of the costs of this suit, to be borne equally by the parties. And that the sum of two thousand five hundred sixty dollars ($2,560), the expense of printing the record in this case, and the sum of two hundred thirty ($230) dollars, the expense of printing the report of the Commissioners in this case, amounting in the aggregate to two thousand seven hundred ninety dollars ($2,790), are allowed and approved as a part of the costs of this suit to be borne equally by the parties and if one of them has paid more than one-half of such sums, it shall be reimbursed by the other for such excess.

It is further ordered, that the clerk of this court do transmit to the respective governors of the states of Minnesota and Wisconsin copies of this decree, duly authenticated under the seal of this court, omitting from said copies the two maps filed with the report.

STATE OF MINNESOTA *v.* STATE OF WISCONSIN.

IN EQUITY.

No. 11, Original. Motion for final decree submitted January 30, 1922.—Decree entered February 27, 1922.

Decree reciting report of commissioners heretofore appointed to run, locate and designate the boundary between Minnesota and Wisconsin involved in this case; confirming the report; establishing the boundary as set forth in said report and upon the maps accompanying the same; and allowing the expenses and compensation of said commissioners as part of the costs of the suit to be borne equally by the parties.

See also, *Minnesota* v. *Wisconsin*, 252 U. S. 273; 254 U. S. 14.

Mr. Clifford L. Hilton, Attorney General of the State of Minnesota, *Mr. W. D. Bailey* and *Mr. H. B. Fryberger* for complainant.

Mr. William J. Morgan, Attorney General of the State of Wisconsin, and *Mr. Ralph M. Hoyt* for defendant.

BY THE COURT:

The State of Minnesota having made a motion before the court for a final decree, confirming the report of the Commissioners appointed by the decree in this cause on the 11th day of October, A. D. 1920, to run, locate and designate the boundary line between the State of Minnesota and the State of Wisconsin, in and through Lower Saint Louis Bay, Upper Saint Louis Bay and the Saint Louis River, from Upper Saint Louis Bay to the falls in said river, which report is in words and figures, as follows:

"To the Honorable Chief Justice and the Associate Justices of the Supreme Court of the United States:

We, Samuel S. Gannett, Washington, D. C.; William B. Patton, Duluth, Minn., and John G. D. Mack, Madison, Wisconsin, Commissioners appointed, under decree of the court rendered October 11th, 1920, 'to run, locate and designate the boundary line between the State of Minnesota and the State of Wisconsin, in and through Lower St. Louis Bay, Upper St. Louis Bay and the St. Louis River, from Upper St. Louis Bay to the "Falls" in the said river,' have the honor to submit the following report, with accompanying maps, which maps are marked Exhibit No. 1, entitled, Supreme Court of the United States, October Term, 1920, No. 13, Original, *Tracing of Parts of Original Map of St. Louis Bay and St. Louis River, Made under Direction of Captain George G. Meade, T. E. 1861, Showing Boundary Line Between Minnesota and Wisconsin as Surveyed in Accordance with Terms of Above Decree in 1921,* and Exhibit No. 2, entitled, Supreme Court of the United States, October Term, 1920, No. 13, Original, *Map Showing Boundary Line Between Minnesota and Wisconsin Through St. Louis Bay and up St. Louis River to the Falls as Surveyed in Accordance with Terms of Above Decree in 1921.*

149. Final Decree.

Organization.

The Commissioners held their first meeting on October 29th, 1920, in suite 612, Palladio Building, in the City of Duluth, Minnesota, and organized by electing Samuel S. Gannett, Chairman.

Meade Chart.

In carrying out the decree of the court, that the 'boundary line must be ascertained upon a consideration of the situation existing in 1846, and accurately described by the Meade Chart,' the Commission made a careful study of the Meade Chart, filed as Minnesota's Exhibit No. 1, and found that the scale of said chart, 1: 32000, was too small for practical use in determining a line which could be laid out and properly monumented; and that the triangulation points of the original Meade survey, shown on the original Meade Map (the location of which was absolutely essential in transferring to the ground points determined on the map), were omitted from the chart.

Meade Map.

An attempt was then made to use the photographic copies of the original Meade map, being Wisconsin's Exhibits Nos. 46C and 46D, but it was found that the process of production had caused unequal shrinkage in the several sheets composing the map, and that no accurate scalings could be made therefrom.

Under instructions of the Commission, Mr. S. S. Gannett went to the office of the U. S. Lake Survey, in the City of Detroit, Michigan, the repository of the original Meade map, and under his personal supervision, caused an accurate tracing to be made of so much of the said Meade map, and the soundings and triangulation points shown thereon, as pertains to the case under considera-

tion. An accurate copy of this tracing, showing in addition the boundary line, as fixed on said map by the Commission, is filed herewith as Exhibit No. 1.

Triangulation Points.

The triangulation points, heretofore noted as being platted on the original Meade map by triangles, and shown in red ink on the aforesaid tracing, are located, in the records of the Lake Survey, by rectangular coordinates referred to the primary triangulation station of the U. S. Lake Survey, known as Minnesota Point North Base, drawn in red ink on aforesaid tracing, and described hereinafter in detail under the heading, 'Descriptions and Geographic Positions of Triangulation and Reference Points.' Commissioner Gannett secured an accurate copy of said coordinates from the official records of the U. S. Lake Survey, and they are correctly given in Table No. 1, attached to this report.

The original Meade triangulation points have not been in existence for some years, but the Corps of Engineers, U. S. Army, in later surveys of the St. Louis Bays and River, has established new triangulation points and referred the same by rectangular coordinates to aforesaid 'Minnesota Point North Base.' An accurate copy of the official coordinates of these later triangulation points was also secured by Commissioner Gannett, and a true copy of same is hereto attached and marked Table No. 2.

With these coordinates, it is possible to accurately relocate the original Meade triangulation points, or to show the new ones on the Meade map in their true positions; and the last mentioned points are thus shown on Exhibit No. 1, being marked by triangles in black ink.

Having the existing, or new, triangulation points platted in their true positions on the Meade map, it is possible to 'tie in' by scale any points or lines on said map to these triangulation points, and to transfer said points

or lines to the ground by similar measurements from said triangulation points.

Office Procedure.

With this information at hand, the Commission laid down on the tracing of the original Meade map, Exhibit No. 1, the boundary line between the States of Minnesota and Wisconsin, in accordance with the decree of the court, namely: 'From a point midway between Rice's Point and Connor's Point, through the middle of Lower St. Louis Bay, to and with the deep channel leading to Upper St. Louis Bay, and to a point therein immediately south of the southern extremity of Grassy Point, thence westward along the most direct course, through water not less than eight feet deep eastward of Fisherman's Island, as indicated by the red trace A-B-C on Minnesota's Exhibit No. 1, approximately one mile to the deep channel and immediately west of the bar therein, thence with such channel north and west of Big Island upstream to the "Falls."'

The center of the pivot pier of the Inter-State Bridge was found to be the point midway between Rice's Point and Connor's Point, and was designated by the Commission as Station No. O. From this point, as a beginning, a series of straight lines was laid out to conform with the decree of the court, special care being taken to have the lines over water not less than eight feet deep as shown by the Meade map, and the angle points between said lines numbered consecutively.

From such of these angle points as were convenient, 'ties' were scaled to the best situated triangulation points on the map, and by means of rectangular coordinates from each angle point on the lines between the 'ties,' to triangulation points, the lengths and angles of deviation of the several lines were calculated, and closed polygons formed. These polygons were then checked as

to closure by the method of latitudes and departures, and any errors found were balanced so as to secure closure. By this means your Commissioners were enabled, with a close approach to accuracy, to determine the lengths and angles of deviation of the several lines composing the projected boundary line.

The lengths and angles thus determined and the 'ties' to the several triangulation points, were used as preliminary field notes by the surveying party employed to 'run out the boundary line and to locate same by proper monuments, courses and distances.'

Boundary Line Above Fond Du Lac.

For that portion of the St. Louis River beyond Fond Du Lac, and extending to the 'Falls,' and which is not shown on the Meade Chart or map, the Commission established the center line of the river, as a medial line between the shore lines, as surveyed by the Commission, and designated said medial line as the boundary line.

The Survey.

As the boundary line, except in a few instances, runs over water from 8 feet to over 20 feet in depth, the most convenient time for surveying it was after ice had formed to a safe thickness. The winter proved to be mild and the ice conditions unfavorable, adding greatly to the danger and difficulty of the work, and increasing the time necessary to finish it.

The surveying party was organized early in January, 1921, and the necessary equipment was rented or purchased. Starting at Station O, heretofore described, the approximate position of the boundary line was laid out on the ice, in the bay and river, from the preliminary field notes, and the 'ties' to the triangulation points, measured. Such discrepancies, due to the curvature of the earth, or to errors in scaling from the map, as were

shown by measuring the 'ties,' were allowed for and distributed in the angles and distances of all the lines back to the preceding 'tie.' If any important discrepancy was discovered, the lines involved were re-run before any adjustments were made. From the final field notes of the adjusted survey, a description of the boundary line by courses and distances was obtained, and is incorporated herein. This work was completed March 19, 1921.

Detailed Description of Boundary Line.

[Here follow lengthy and detailed descriptions of the boundary line, as determined, the monuments, and of triangulation and reference points, with geographic positions, which are omitted by the Reporter as not being of general interest. Persons interested in these may consult the original decree in the clerk's office, obtain certified copies, or consult the copies forwarded to the Governors of the two States.]

Map of Boundary Line.

The Commission has prepared, and transmits herewith as Exhibit No. 2, a map of St. Louis Bays and River on the scale of 1: 24000, showing their present conditions, improvements along the harbor front, the U. S. Government Harbor Lines and channels, and the relative position of the boundary line. There are also shown as sub-maps, on larger scale, improved or partly improved properties which are crossed by the boundary line; also detailed drawings of the concrete monuments as constructed.

Tables.

The rectangular coordinates, referred to Minnesota Point North Base, of all monuments, reference point[s] and line points are shown in Tables Nos. 2, 4 and 5, hereto attached.

The geographic positions of the angle points in the boundary line are shown in Table No. 6.

Instruments.

The instrument used in making the survey was a Transit Theodolite with 6½-inch circle and reading to 10 seconds of arc. The measurements were made on the surface of the ice with a steel tape 300 feet in length, under a tension of twenty pounds, and corrected to temperature of 62° F.

Personnel.

The Commission employed as assistants the following named persons, namely:

Gordon F. Daggett, Madison, Wisconsin, Consulting Engineer.

Lyonel Ayres, Duluth, Minnesota, Consulting Engineer.

D. W. Van Vleck, Superior, Wisconsin, Consulting Engineer.

Paul Lillard, Madison, Wisconsin, Transit Man, in charge of field party.

Edwin O. Anderson, Duluth, Minn., Chainman.

Frank Kieserling, Duluth, Minn., Chainman.

Frank Suech, Jr., Duluth, Minn., Rodman.

Robert Case, Duluth, Minn., Rodman.

Robert Sansted, Duluth, Minn., Rodman.

Ray Mapp, Duluth, Minn., Draughtsman.

Eusebe J. Blais, Duluth, Minn., Draughtsman.

Finances.

We return herewith a financial statement showing in detail the money actually expended in carrying out the terms of the decree of the court.

Record Books.

All field, computation and record books have been placed in the custody of the chairman of the Commission,

and filed by him in the office of the Geological Survey, Interior Department, Washington, D. C.

Respectfully submitted.

SAMUEL S. GANNETT,
WILLIAM B. PATTON,
JOHN G. D. MACK,
Commissioners."

June 25th, 1921.

The cause coming on to be heard upon said motion of the said State of Minnesota.

It is hereby ordered, adjudged and decreed, that said report of said Commission, filed in the office of the clerk of this court on August 5, 1921, is in all respects confirmed.

It is further ordered, adjudged and decreed that the line as delineated and set forth in said report and upon the two maps accompanying said report being marked respectively Exhibits 1 and 2 by said Commission and which line has been marked by permanent monuments as stated in said report, be and the same is hereby established, declared and decreed to be the true boundary line between the States of Minnesota and Wisconsin and said maps so marked as aforesaid as Exhibits 1 and 2 are directed to be filed as a part of this decree and it appearing that the expenses and compensation of the Commissioners attendant upon the discharge of their duties amounts to fifteen thousand six hundred twenty-six dollars and six cents ($15,626.06), it is ordered that the same be allowed and approved as a part of the costs of this suit, to be borne equally by the parties. And that the sum of two thousand five hundred sixty dollars ($2,560), the expense of printing the record in this case, and the sum of two hundred thirty ($230) dollars, the expense of printing the report of the Commissioners in this case, amounting in the aggregate to two thousand seven hundred ninety dollars ($2,790), are allowed and approved as a part of the costs

of this suit to be borne equally by the parties and if one of them has paid more than one-half of such sums, it shall be reimbursed by the other for such excess.

It is further ordered, that the clerk of this court do transmit to the respective governors of the States of Minnesota and Wisconsin copies of this decree, duly authenticated under the seal of this court, omitting from said copies the two maps filed with the report.